

## **Strategic Plan National Animal Health Surveillance System**

### **Introduction**

The USDA-APHIS-Veterinary Services (VS) has the expertise and infrastructure to work in collaboration with animal\* health and production industries, universities, and State and federal partners to systematically collect, collate and analyze animal health data and promptly disseminate vital information to those who might take action. Veterinary Services' infrastructure, expertise and partnerships are essential to effectively respond to the agency's strategic plans, the Animal Health Safeguarding Review, the Animal Health Protection Act, and the Homeland Security Presidential Directive - 9 (HSPD-9). Veterinary Services is positioned to assume the role of leader and coordinator in building a National Animal Health Surveillance System (NAHSS).

The NAHSS will develop alliances and partnerships with multiple government and private entities, aimed at protecting animal health, veterinary public health, social welfare and food security associated with animal populations. The surveillance system must incorporate science-based approaches for early detection of emerging and introduced diseases, monitoring animal health trends, assessing risk, and enhancing welfare, productivity and economic viability of animals and animal-related industries in the U.S.

The transition from current surveillance activities to a comprehensive, coordinated and integrated NAHSS will require institutional and cultural changes in both Veterinary Services and the animal health community. Movement must be made from conducting compartmentalized surveillance efforts surrounding one disease, to viewing animal disease surveillance as an overall system. This complex undertaking will require development and integration of many activities and partnerships. New methods and approaches need to be designed, evaluated and implemented. Although consequences of inadequate surveillance could be catastrophic, the resources to carry out surveillance activities are not unlimited and have to be judiciously and efficiently allocated.

### **Overall goal**

The goal of the NAHSS is to establish and maintain the expertise and infrastructure for early detection and global risk surveillance for foreign and emerging diseases; evaluation and enhancement of surveillance for current disease control and eradication programs; monitoring of disease trends and threats to animal and veterinary public health in the U.S. and other countries; assessment of risk; and timely dissemination of animal health information. The NAHSS will contribute to the establishment, improvement and maintenance of animal health, veterinary public health and associated food safety and environmental health systems. The NAHSS, as one of many components both within and

---

\* As defined by the Animal Health Protection Act to mean any member of the animal kingdom, except humans.

outside of agriculture working closely with the Department of Homeland Security, will improve the ability to detect bio-threats amidst the background noise of bio-events.

## **Purpose**

This strategic plan provides the framework to set priorities and create a roadmap for the transformation of current surveillance activities into the NAHSS which will assure greater protection from endemic, emerging and foreign animal diseases to our nation's animal populations. The plan will emphasize the necessary links to other surveillance efforts including those outlined in HSPD-9 and those identified in existing veterinary public health and food safety surveillance systems. The plan will be updated and modified as needed and as new features of the NAHSS are contemplated, evaluated, and implemented.

The following table delineates the current objectives for each of the four NAHSS goals: early detection and global risk surveillance for foreign animal and emerging diseases, enhanced surveillance for current “program diseases”, and monitoring and surveillance for diseases of major impact on production and marketing. In the appendices, each of the goals’ objectives are specifically identified with proposed actions and projected target dates for completion. This document is dynamic in nature to allow flexibility for updates, amendments, and expansion as new objectives are ascertained.

|    |  | <b>Goals (4):</b>                                       |                          |   |   |
|----|--|---|--------------------------|---|---|
|    | <b>Objectives (12):</b>  | <b>Early detection and global risk surveillance of:</b> |                          | <b>Enhanced surveillance for current “program diseases”</b> | <b>Monitoring and surveillance for diseases of major impact on production and marketing</b> |
|    |  | <b>Foreign Animal Disease</b>                           | <b>Emerging Diseases</b> |   |   |
| 1  | Coordinate and collaborate on design and implementation of disease surveillance (using standardized process)   | X   | X                        | X   |   |
| 2  | Develop standards, quality control, and performance metrics for current and future surveillance systems  | X   | X                        | X   | X   |
| 3  | Encourage the development and application of new technologies for early and rapid disease detection and data analysis                                  | X   | X                        | X   |   |
| 4  | Support and perform data capture, analysis, interpretation, and dissemination (using standardized methods)   | X   | X                        | X   | X   |
| 5  | Develop domestic and global surveillance to detect and identify elevated risks for specified diseases and support response activities                  | X   | X                        | X   |   |
| 6  | Establish and maintain a disease surveillance capability inventory to facilitate analysis of gaps in surveillance and surveillance systems integration | X   | X                        | X   |   |
| 7  | Enhance collaboration with domestic and international sources of disease surveillance information  | X   | X                        |   |   |
| 8  | Develop reporting systems and reports for surveillance information dissemination   | X   | X                        |   |   |
| 9  | Identify regulatory limitations for conducting surveillance  | X   | X                        |   |   |
| 10 | Contribute to animal disease awareness education for producers and practitioners   | X   | X                        | X   | X   |
| 11 | Coordinate and collaborate on monitoring animal health and production trends   |   |                          |   | X   |
| 12 | Evaluate and design rigorous scientific methods to assess progress in disease prevention, control, and eradication programs                            |   |                          | X   |   |

## Appendix I

### *Goal: Early detection and global risk surveillance of foreign animal diseases*

| No. | Objective   | Action   | Target Date   |
|-----|---|--|---------------|
| 1   | Coordinate and collaborate on design and implementation of foreign animal disease surveillance plan(s) for high priority diseases using standardized processes. | Preparation of standardized surveillance plan format                               | December 2004 |
|     |   | Develop Foot-and-Mouth Disease (FMD)/ vesicular disease surveillance plan          | June 2005     |
|     |   | Develop Classical Swine Fever (CSF)/ swine disease surveillance plan               |               |
|     |   | Develop Exotic Newcastle Disease (END)/Avian Influenza (AI) surveillance plan      | June 2005     |
| 2   | Develop standards, quality control and performance metrics for foreign animal disease surveillance systems.   | Develop a syndromic surveillance model   |               |
| 3   | Encourage the development and application of new technologies for early and rapid foreign animal disease detection and data analysis.                           | Validate CSF assay   | Ongoing       |
|     |   | Deploy CSF assay to National Animal Health Laboratory Network (NAHLN) laboratories |               |

| No. | Objective  | Action  | Target Date   |
|-----|--|---|---------------|
|     |  | Finalize predictive spatial modeling approach for Heartwater disease  | December 2004 |
|     |  | Evaluate and assess applicability of Technical Support Working Group (TSWG) Microscope Project  | January 2005  |
|     |  | Evaluate and assess applicability of TSWG Viral Glass Project   | January 2005  |
|     |  | Deploy new assays and reagents to NAHLN laboratories  | Ongoing       |
|     |  | Deploy FMD rapid diagnostic test to approved laboratories   |               |
|     |  | Evaluate Digital Analysis Environment (DIANE) data analysis project as a tool for Animal and Plant Health Inspection Service (APHIS) analysts | November 2004 |
|     |  | Evaluate the Starlight data analysis project as a tool for APHIS analysts   | November 2004 |
| 4   | Support and perform data capture, analysis, interpretation and dissemination using standardized methods. | Participate in planning and implementation of Department of Homeland Security's (DHS) National Biosurveillance Integration System (NBIS)      | Ongoing       |

| No. | Objective | Action   | Target Date |
|-----|-----------|--|-------------|
|     |           | Develop internet mapping capabilities as a tool for data dissemination   | Ongoing     |
|     |           | Contribute information to the Veterinary Services' (VS) Atlas (a spatial data library that contains a variety of geographic information available for surveillance efforts) that can be used to support analysis | Ongoing     |
|     |           | Establish a means to obtain and transfer data within the Data Warehouse Project  | Ongoing     |
|     |           | Establish protocols to pull valid data from the Generic Database (GDB)   | March 2005  |
|     |           | Establish protocols to pull valid data from Emergency Management Response System (EMRS)  | March 2005  |
|     |           | Develop a group of analysts trained on tools such as DIANE, Starlight, and Pathfinder to analyze domestic data   | July 2005   |
|     |           | Outline Enterprise Architecture of a domestic surveillance system  | April 2005  |
|     |           | Analyze data received from the International Safeguarding Officers, established by International Services  | Ongoing     |

| No. | Objective   | Action   | Target Date   |
|-----|---|--|---------------|
|     |   | Analyze data from the Offshore Pest Information System (OPIS) and the Global Pest Disease Database (GPDD)  | Ongoing       |
| 5   | Develop domestic and global surveillance to detect and identify elevated risks for specified diseases and support response activities.                    | Develop a guideline on rapid surveillance practices during an outbreak on both local and national levels   | April 2006    |
|     |   | Develop Surveillance Needs Analysis Teams that can assess outbreak incidents and recommend surveillance strategies   | April 2006    |
|     |   | Perform a gap analysis of the surveillance strategies used in the US, Canada, and Mexico   | October 2005  |
| 6   | Establish and maintain a foreign animal disease surveillance capability inventory to facilitate analysis of gaps in surveillance and systems integration. | Develop a comprehensive surveillance inventory   | December 2004 |
| 7   | Enhance collaboration with domestic and international sources of disease surveillance information.  | Enhance OPIS database to meet VS needs   | Spring 2005   |
|     |   | Evaluate new technologies to enhance electronic scanning and analysis of surveillance data; purchase and incorporate new technology dependent upon evaluations | Summer 2005   |
|     |   | Coordinate and synchronize predictive modeling between DHS and APHIS sponsored projects  | May 2005      |

| No. | Objective  | Action  | Target Date    |
|-----|--|---|----------------|
|     |  | Establish the Animal Health Analysis Team to analyze and prioritize foreign and domestic animal health data obtained via intelligence sources and the international safeguarding officers                                       | July 2006      |
| 8   | Develop reporting systems and reports for foreign animal disease surveillance information dissemination. | Expand National Animal Health Reporting System (NAHRS) efforts to all 50 states   | Ongoing        |
|     |  | Finalize Swine Health Advisory Committees charter   | Ongoing        |
| 9   | Identify regulatory limitations for conducting surveillance.   | Review requirements for veterinary licensure as it relates to sample collection   | July 2005      |
|     |  | Review State and Federal veterinary authorities as they relate to mandatory and voluntary surveillance issues   |                |
| 10  | Contribute to foreign animal disease awareness education for producers and practitioners.                | Develop a case definition library   | September 2005 |
|     |  | Develop opportunities for foreign animal disease (FAD) /Emergency Awareness training with Professional Development Staff (PDS), APHIS office of Emergency Management (EM), liaison Center for Domestic Preparedness, and others | Ongoing        |

## Appendix II

### *Goal: Early detection and global risk surveillance of emerging animal diseases*

| No. | Objective  | Action  | Target Date   |
|-----|--|---|---------------|
| 1   | Coordinate and collaborate on the design and implementation of emerging disease surveillance using standardized processes. | Develop options for target Bovine Spongiform Encephalopathy (BSE) surveillance level  | December 2004 |
|     |  | Develop detailed plan for BSE surveillance  | June 2005     |
|     |  | Review Emerging Animal Health Information System (EAHIS), as documented in October 2001, to determine current and future direction of emerging disease surveillance | Winter 2004   |
|     |  | Finalize incorporation of electronic Veterinary events database (eVe) into EMRS   | Winter 2004   |
|     |  | Develop an arthropod-borne disease surveillance plan  |               |
|     |  | Develop a Spring Viremia of Carp (SVC) surveillance plan  |               |
| 2   | Develop standards, quality control and performance metrics for emerging disease surveillance systems.                      | Develop prioritization criteria for items to be incorporated into eVe   |               |

| No. | Objective   | Action   | Target Date   |
|-----|---|--|---------------|
|     |   | Develop a syndromic surveillance model   |               |
| 3   | Encourage the development and application of new technologies for early and rapid emerging disease detection and data analysis. | Evaluate new technologies to enhance electronic scanning and analysis of surveillance data; purchase and incorporate new technology dependent upon evaluations | Summer 2005   |
|     |   | Evaluate and assess applicability of TSWG Microscope Project   | January 2005  |
|     |   | Evaluate and assess applicability of TSWG Viral Glass Project  | January 2005  |
|     |   | Deploy new assays and reagents to NAHLN laboratories   | Ongoing       |
|     |   | Evaluate DIANE data analysis project as a tool for APHIS analysts  | November 2004 |
|     |   | Evaluate the Starlight data analysis project as a tool for APHIS analysts  | November 2004 |
| 4   | Support and perform data capture, analysis, interpretation and dissemination using standardized methods.                        | Develop analysis parameters for data collected by Center for Emerging Issues (CEI) (e.g. within Pathfinder and eVe)  | Spring 2005   |
|     |   | Participate in the planning and implementation of DHS's NBIS   | Ongoing       |

| No. | Objective | Action   | Target Date |
|-----|-----------|--|-------------|
|     |           | Develop internet mapping capabilities as a tool for data dissemination   | Ongoing     |
|     |           | Contribute information to the VS atlas which can be used to support analysis                                   | Ongoing     |
|     |           | Establish a means to obtain and transfer data within the Data Warehouse Project                                | Ongoing     |
|     |           | Establish protocols to pull valid data from the GDB  | March 2005  |
|     |           | Establish protocols to pull valid data from EMRS   | March 2005  |
|     |           | Develop a group of analysts trained on tools such as DIANE, Starlight, and Pathfinder to analyze domestic data | July 2005   |
|     |           | Outline Enterprise Architecture of a domestic surveillance system  | April 2005  |
|     |           | Analyze data received from the International Safeguarding Officers, established by International Services      | Ongoing     |
|     |           | Analyze data from OPIS and GPDD  | Ongoing     |

| <b>No.</b> | <b>Objective</b>   | <b>Action</b>  | <b>Target Date</b> |
|------------|--|--|--------------------|
| 5          | Develop domestic and global surveillance to detect and identify elevated risks for specified diseases and support response activities.               | Finalize white paper on emerging disease modeling and forecasting  | November 2004      |
| 6          | Establish and maintain an emerging disease surveillance capability inventory to facilitate analysis of gaps in surveillance and systems integration. | Develop a comprehensive surveillance inventory   | December 2004      |
| 7          | Enhance collaboration with domestic and international sources of disease surveillance information.   | Enhance OPIS database to meet VS needs   | Spring 2005        |
|            |  | Perform electronic surveillance of open source information that includes international sources           | Ongoing            |
|            |  | Evaluate DIANE product as enhanced source of foreign language data                                       | Winter 2005        |
|            |  | Collaborate with epidemiologists in other countries for emerging disease surveillance and identification | Ongoing            |
|            |  | Coordinate and synchronize predictive modeling between DHS and APHIS sponsored projects                  | May 2005           |

| No. | Objective  | Action  | Target Date              |
|-----|--|---|--------------------------|
|     |  | Establish the Animal Health Analysis Team to analyze and prioritize foreign and domestic animal health data obtained via intelligence sources and the international safeguarding officers | July 2006                |
| 8   | Develop reporting systems and reports for emerging disease surveillance information dissemination. | Develop reports from OPIS data collection   |                          |
| 9   | Identify regulatory limitations for conducting surveillance.                                       | Review requirements for veterinary licensure as it relates to sample collection   | July 2005                |
|     |  | Review State and Federal veterinary authorities as they relate to mandatory and voluntary surveillance issues   |                          |
| 10  | Contribute to emerging disease awareness education for producers and practitioners.                | Develop and present emerging issues training modules to facilitate early detection  | February and August 2005 |
|     |  | Develop a case definition library   | September 2005           |

### *Appendix III*

*Goal: Enhance surveillance for current “program diseases”*

| <b>No.</b> | <b>Objective</b>   | <b>Action</b>   | <b>Target Date</b> |
|------------|--|---|--------------------|
| 1          | Coordinate and collaborate on the design and implementation of program disease surveillance using standardized processes       | Conduct an in-depth evaluation of one or more program disease surveillance components   | September 2005     |
|            |  | Integrate a feral-transitional swine risk-based component into Pseudorabies Virus (PRV) and Swine Brucellosis (SB) surveillance | December 2005      |
|            |  | Develop a comprehensive poultry disease surveillance plan   | September 2005     |
| 2          | Develop standards, quality control and performance metrics for program disease surveillance systems.                           | Perform comprehensive assessment of the GDB as source of national surveillance data   | December 2004      |
|            |  | Develop cooperative Federal-State-industry standards for low pathogenic AI H5/H7 program  | October 2004       |
| 3          | Encourage the development and application of new technologies for early and rapid program disease detection and data analysis. |   |                    |

| <b>No.</b> | <b>Objective</b>   | <b>Action</b>  | <b>Target Date</b> |
|------------|--|--|--------------------|
| 4          | Support and perform data capture, analysis, interpretation and dissemination using standardized methods.   | Develop a network with Food Safety Inspection Services (FSIS) to obtain appropriate denominator data from slaughter establishments |                    |
|            |  | Examine marketing trends to facilitate targeted surveillance opportunities   |                    |
|            |  | Develop database for AI H5/H7 in commercial and live bird market system populations  | October 2005       |
| 5          | Develop domestic and global surveillance to detect and identify elevated risks for specified diseases and support response activities.             |  |                    |
| 6          | Establish and maintain a program disease surveillance capability inventory to facilitate analysis of gaps in surveillance and systems integration. | Develop a comprehensive surveillance inventory   | December 2004      |
| 10         | Contribute to program disease awareness education for producers and practitioners.   |  |                    |
| 12         | Evaluate and design rigorous and scientific methods to assess progress in disease prevention, control and eradication programs.                    | Evaluate application of value of information and time value of information theory to the design of surveillance plans              | December 2004      |

## Appendix IV

*Goal: Monitoring and surveillance for diseases of major impact on production and marketing*

| No. | Objective   | Action  | Target Date   |
|-----|---|---|---|
| 1   | Coordinate and collaborate on monitoring animal health and production trends. | <p>Complete National Animal Health Monitoring System (NAHMS) active data collection:</p> <p>Poultry—small production &amp; backyard flocks<br/>—live poultry market epi questionnaire<br/>—gamefowl owners—mail survey to members of United Gamefowl Breeders Assoc.</p> <p>Equine—events questionnaire<br/>—NAHMS Equine 2005 survey</p> <p>Captive Cervid—epi questionnaire in collaboration with certification program</p> <p>Swine—NAHMS Swine 2006</p> <p>Death Loss studies—sheep cause of loss<br/>—cattle cause of loss</p> | <p>Ongoing<br/>During 2005</p> <p>FY05, 1<sup>st</sup> and 2<sup>nd</sup><br/>Quarter</p> <p>January 2005<br/>Summer 2005</p> <p>During 2005</p> <p>Midyear FY06</p> <p>January 2005<br/>January 2006</p> |

| No. | Objective  | Action  | Target Date  |
|-----|--|---|--|
|     |  | (continued)<br>Nonambulatory—cattle & calves scope<br>—cattle & calves causes and handling<br>—equine<br>—sheep & lambs scope<br>—swine<br><br>Sentinel feedlot—characterizing morbidity & mortality<br><br>National Premise Identification survey<br><br>Bulk Tank Somatic Cell Counts (BTSCC)—<br>collaboration with Agriculture<br>Marketing Service (AMS)<br><br>Collaboration in Animal Health and Food<br>Safety Epidemiology (CAHFSE)—<br>swine monitoring blood & fecal | January 2005<br>April 2005<br>Summer 2005<br>January 2005 & 2006<br>Midyear FY06<br><br>Monthly<br><br>Spring 2005<br><br>Monthly<br><br>Quarterly |
| 2   | Develop standards, quality control and performance metrics for surveillance systems. | Identify key health indicators (specific causes of loss by age group within each commodity)   | June 2005  |
|     |  | Create operational plan to collect key health indicator data on an annual basis   | October 2005   |
|     |  | Methods development for optimal biologic collection and testing for dairy monitoring via CAHFSE   |  |

| <b>No.</b> | <b>Objective</b>   | <b>Action</b>  | <b>Target Date</b> |
|------------|--|--|--------------------|
| 4          | Support and perform data capture, analysis, interpretation and dissemination using standardized methods. | NAHMS active data collection—entry, validation, analysis, & publication of information sheets, descriptive reports, & interpretive reports | Ongoing            |
| 10         | Contribute to animal disease awareness education for producers and practitioners                         | Collaborate with industry publications, expanding distribution, and adding value to NAHMS reports  | Ongoing            |
|            |  | Distribute informational packets on biosecurity, etc., to producers in the respective study samples  | Ongoing            |
|            |  | Provide presentations to industry groups on NAHMS study results  | Ongoing            |